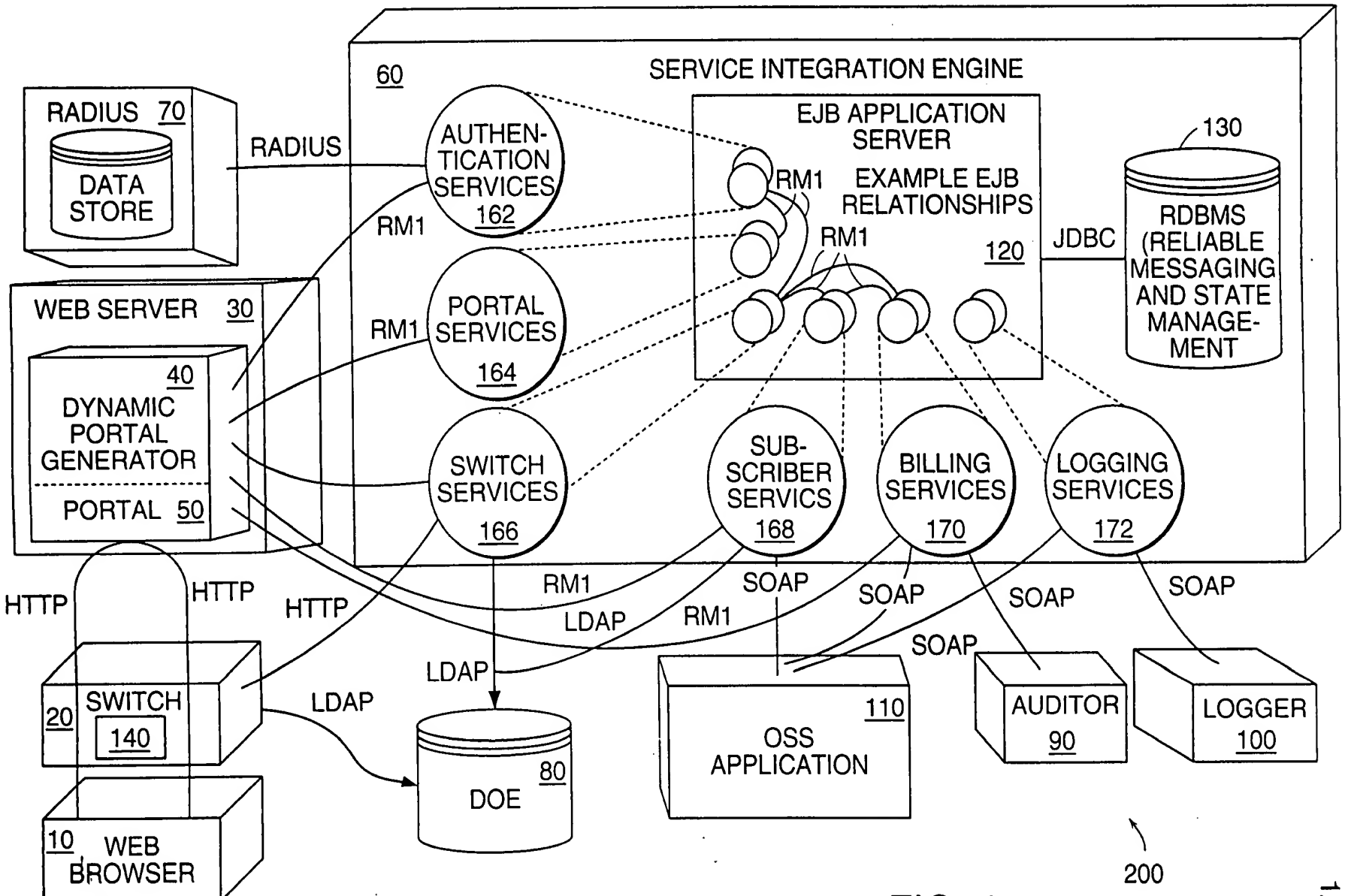

60
SERVICE INTEGRATION ENGINE
RADIUS 70
DATA STORE
RADIUS
AUTHEN-TICATION SERVICES 162
RM1
EJB APPLICATION SERVER
RM1
EXAMPLE EJB RELATIONSHIPS
RM1
120
JDBC
130
RDBMS (RELIABLE MESSAGING AND STATE MANAGE-MENT
WEB SERVER 30
RM1
PORTAL SERVICES 164
40
DYNAMIC PORTAL GENERATOR
PORTAL 50
SWITCH SERVICES 166
SUB-SCRIBER SERVICS 168
BILLING SERVICES 170
LOGGING SERVICES 172
HTTP
HTTP
HTTP
RM1
LDAP
RM1
SOAP
SOAP
SOAP
SOAP
SOAP
LDAP
LDAP
20 SWITCH 140
80 DOE
110 OSS APPLICATION
AUDITOR 90
LOGGER 100
10 WEB BROWSER
200

FIG. 1

TOP-LEVEL FLOW

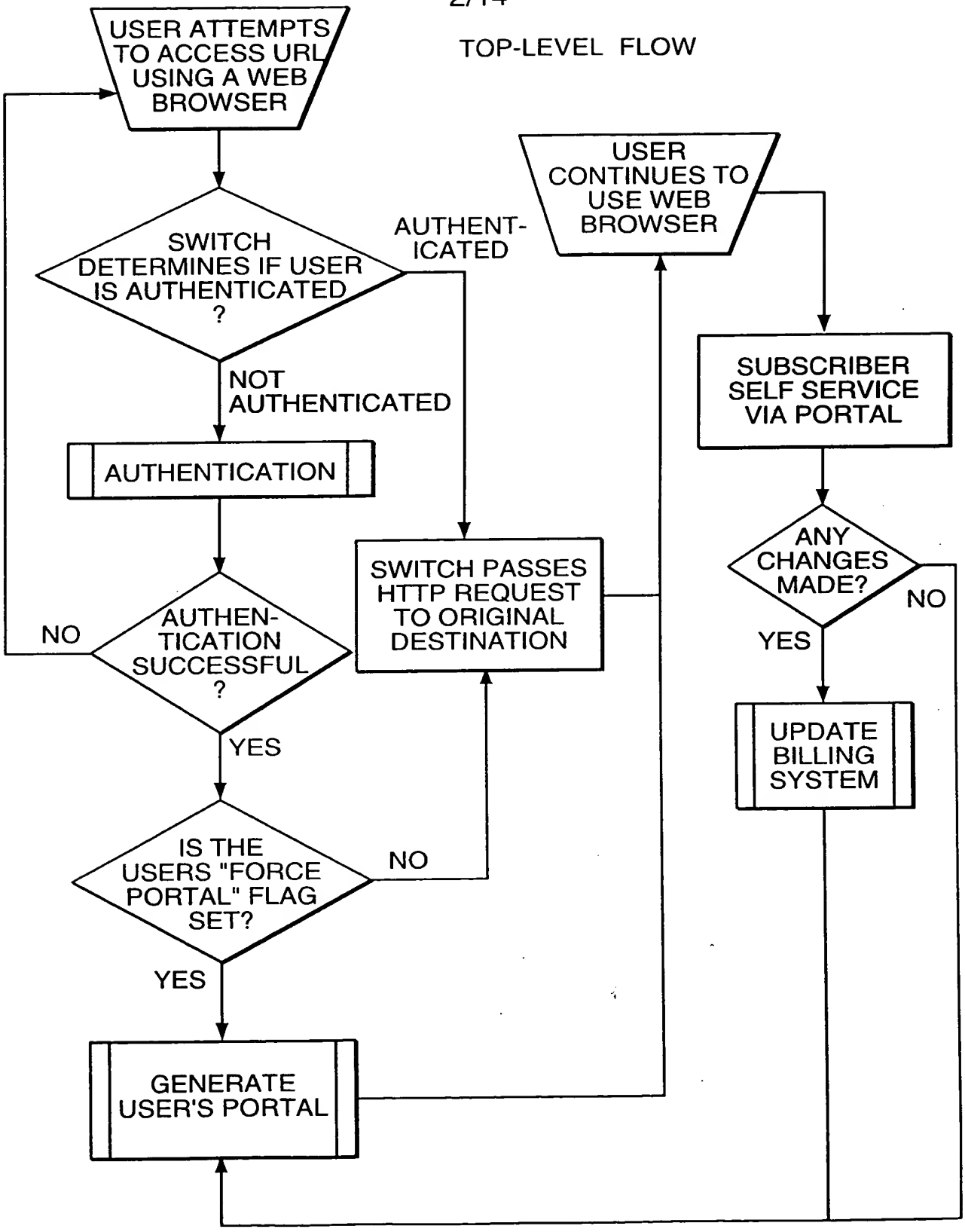


FIG. 2

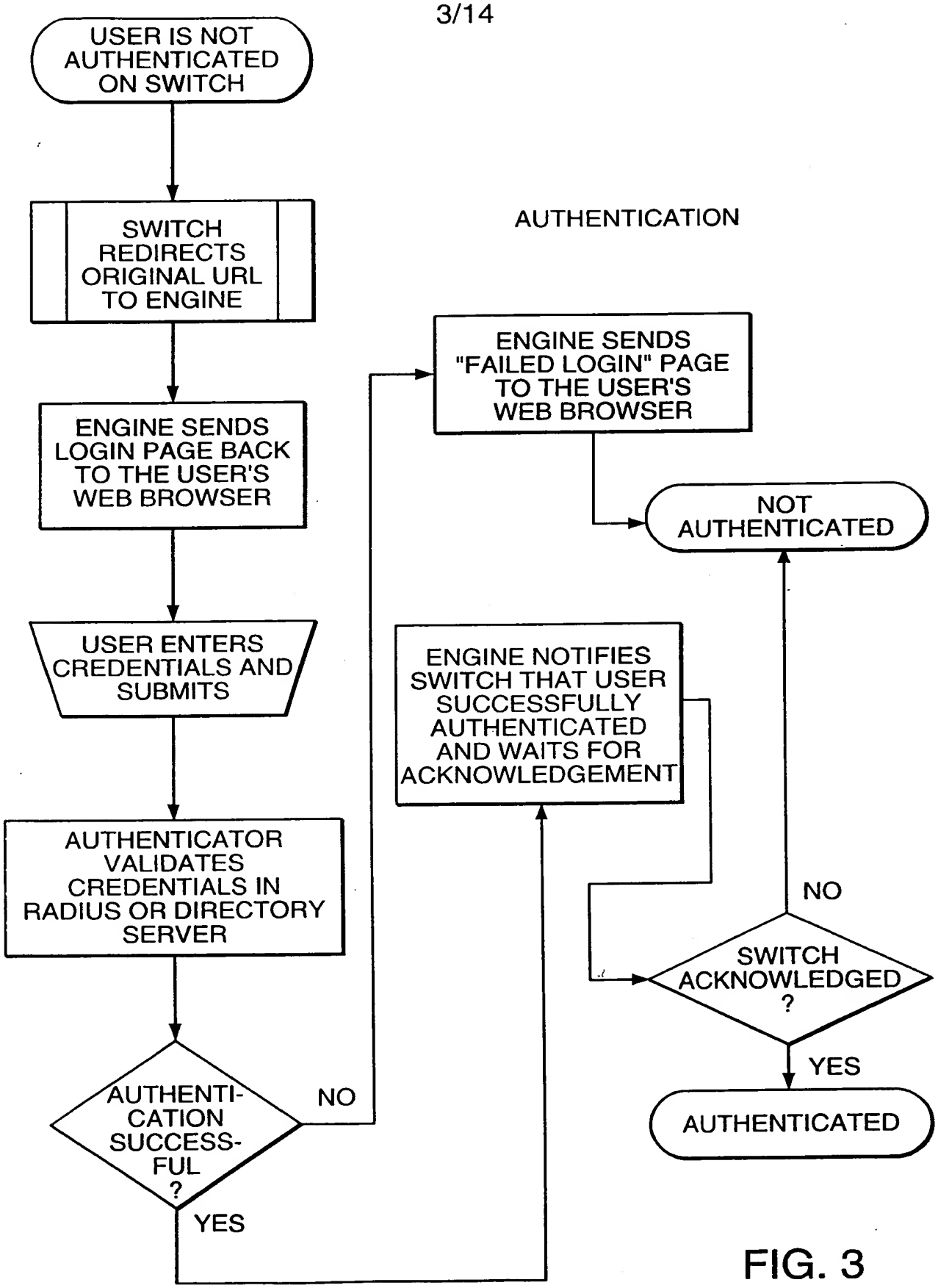

USER IS NOT AUTHENTICATED ON SWITCH
SWITCH REDIRECTS ORIGINAL URL TO ENGINE
ENGINE SENDS LOGIN PAGE BACK TO THE USER'S WEB BROWSER
USER ENTERS CREDENTIALS AND SUBMITS
AUTHENTICATOR VALIDATES CREDENTIALS IN RADIUS OR DIRECTORY SERVER
AUTHENTI-CATION SUCCESS-FUL ?
NO
YES
ENGINE SENDS "FAILED LOGIN" PAGE TO THE USER'S WEB BROWSER
NOT AUTHENTICATED
ENGINE NOTIFIES SWITCH THAT USER SUCCESSFULLY AUTHENTICATED AND WAITS FOR ACKNOWLEDGEMENT
NO
SWITCH ACKNOWLEDGED ?
YES
AUTHENTICATED
AUTHENTICATION

FIG. 3

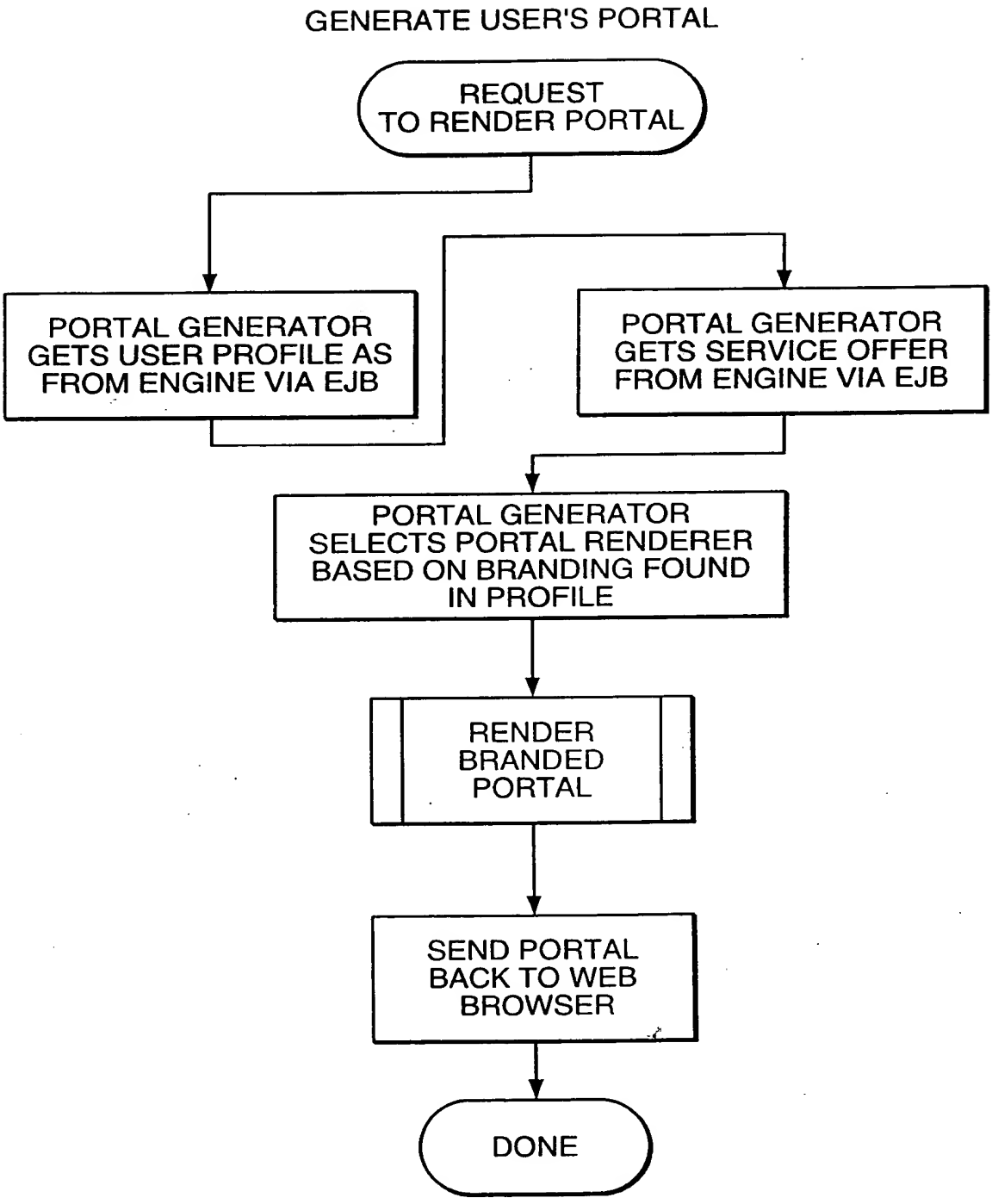

GENERATE USER'S PORTAL
REQUEST TO RENDER PORTAL
PORTAL GENERATOR GETS USER PROFILE AS FROM ENGINE VIA EJB
PORTAL GENERATOR GETS SERVICE OFFER FROM ENGINE VIA EJB
PORTAL GENERATOR SELECTS PORTAL RENDERER BASED ON BRANDING FOUND IN PROFILE
RENDER BRANDED PORTAL
SEND PORTAL BACK TO WEB BROWSER
DONE

FIG. 4

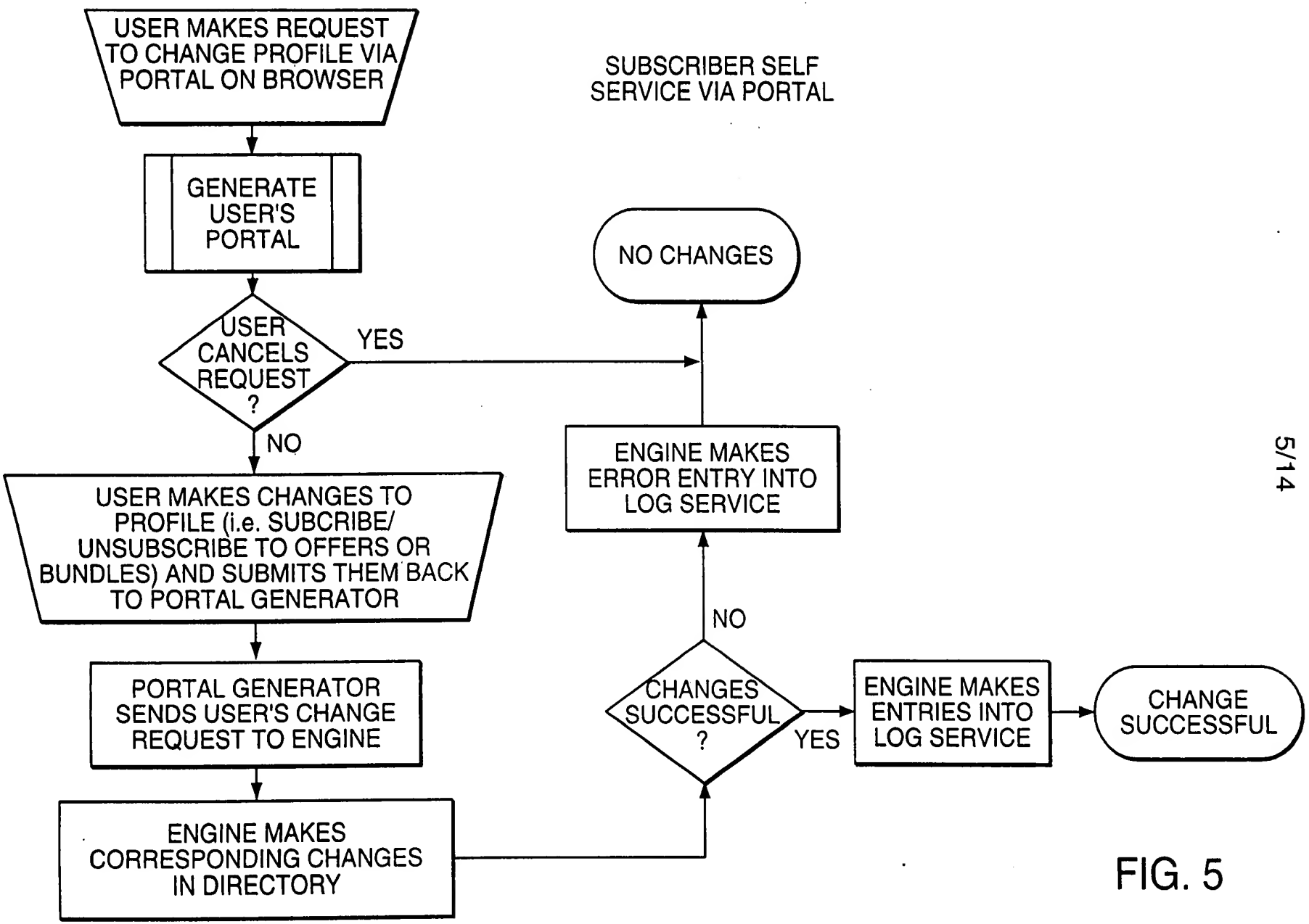

USER MAKES REQUEST TO CHANGE PROFILE VIA PORTAL ON BROWSER
SUBSCRIBER SELF SERVICE VIA PORTAL
GENERATE USER'S PORTAL
NO CHANGES
USER CANCELS REQUEST ?
YES
NO
ENGINE MAKES ERROR ENTRY INTO LOG SERVICE
USER MAKES CHANGES TO PROFILE (i.e. SUBCRIBE/ UNSUBSCRIBE TO OFFERS OR BUNDLES) AND SUBMITS THEM BACK TO PORTAL GENERATOR
NO
PORTAL GENERATOR SENDS USER'S CHANGE REQUEST TO ENGINE
CHANGES SUCCESSFUL ?
YES
ENGINE MAKES ENTRIES INTO LOG SERVICE
CHANGE SUCCESSFUL
ENGINE MAKES CORRESPONDING CHANGES IN DIRECTORY

FIG. 5

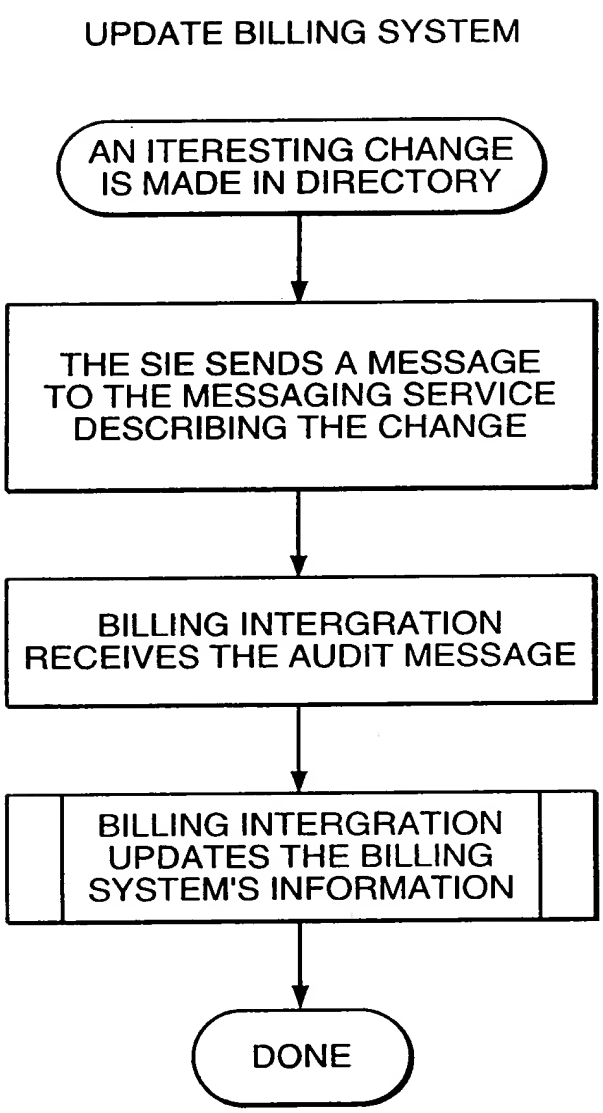

UPDATE BILLING SYSTEM
AN ITERESTING CHANGE IS MADE IN DIRECTORY
THE SIE SENDS A MESSAGE TO THE MESSAGING SERVICE DESCRIBING THE CHANGE
BILLING INTERGRATION RECEIVES THE AUDIT MESSAGE
BILLING INTERGRATION UPDATES THE BILLING SYSTEM'S INFORMATION
DONE

FIG. 6

CREATING AND EDITING SERVICE ELEMENTS

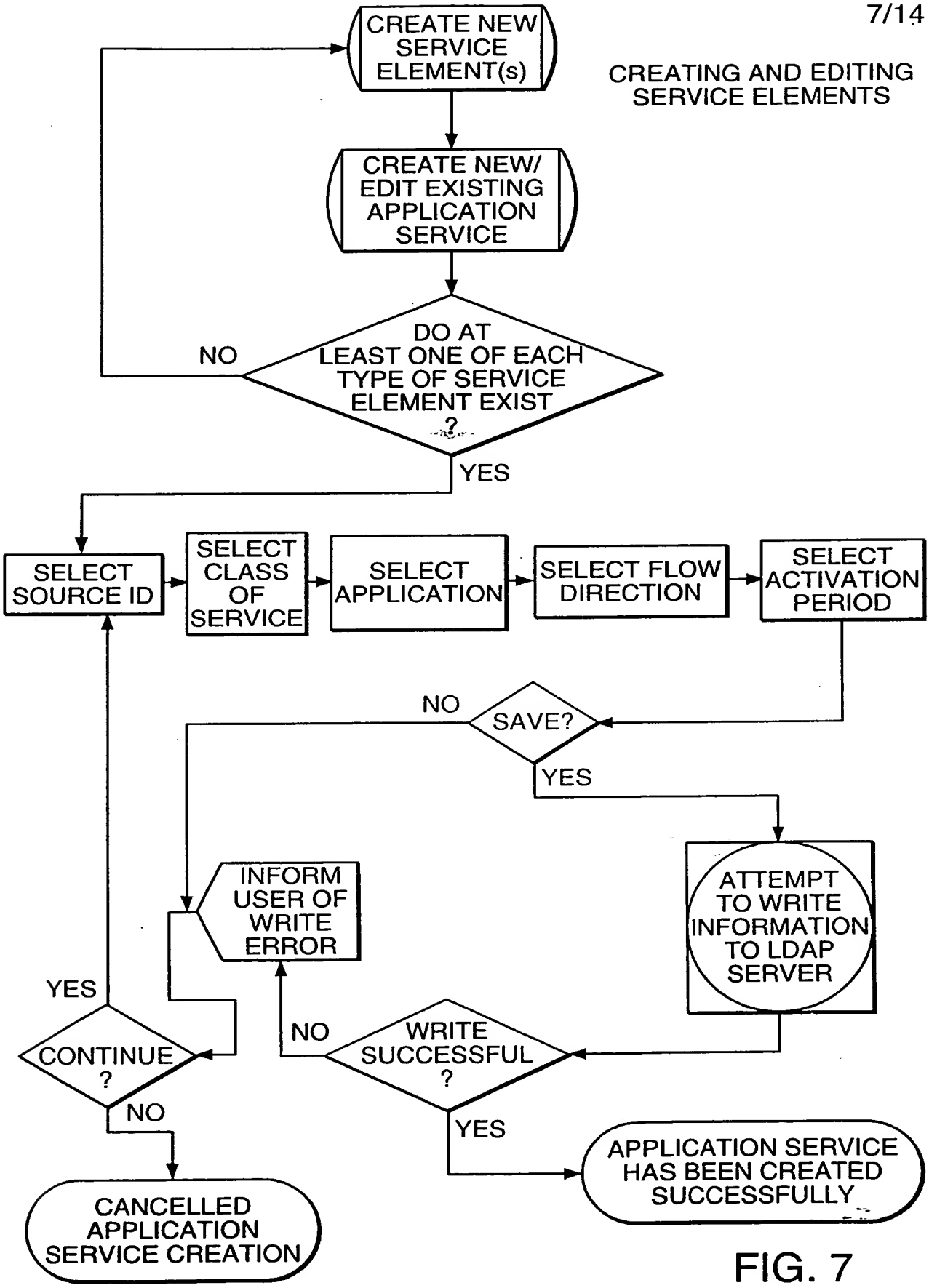


FIG. 7

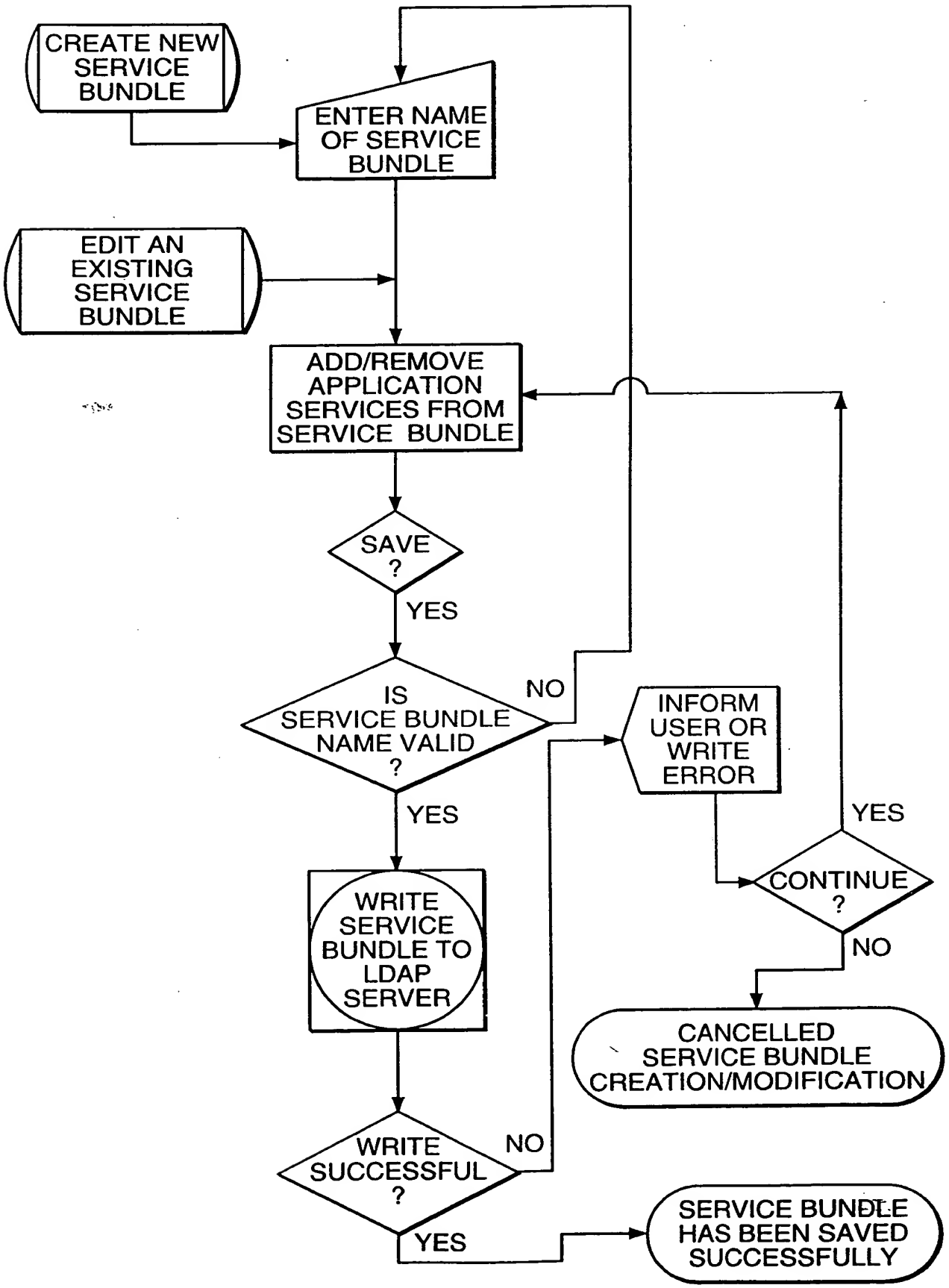
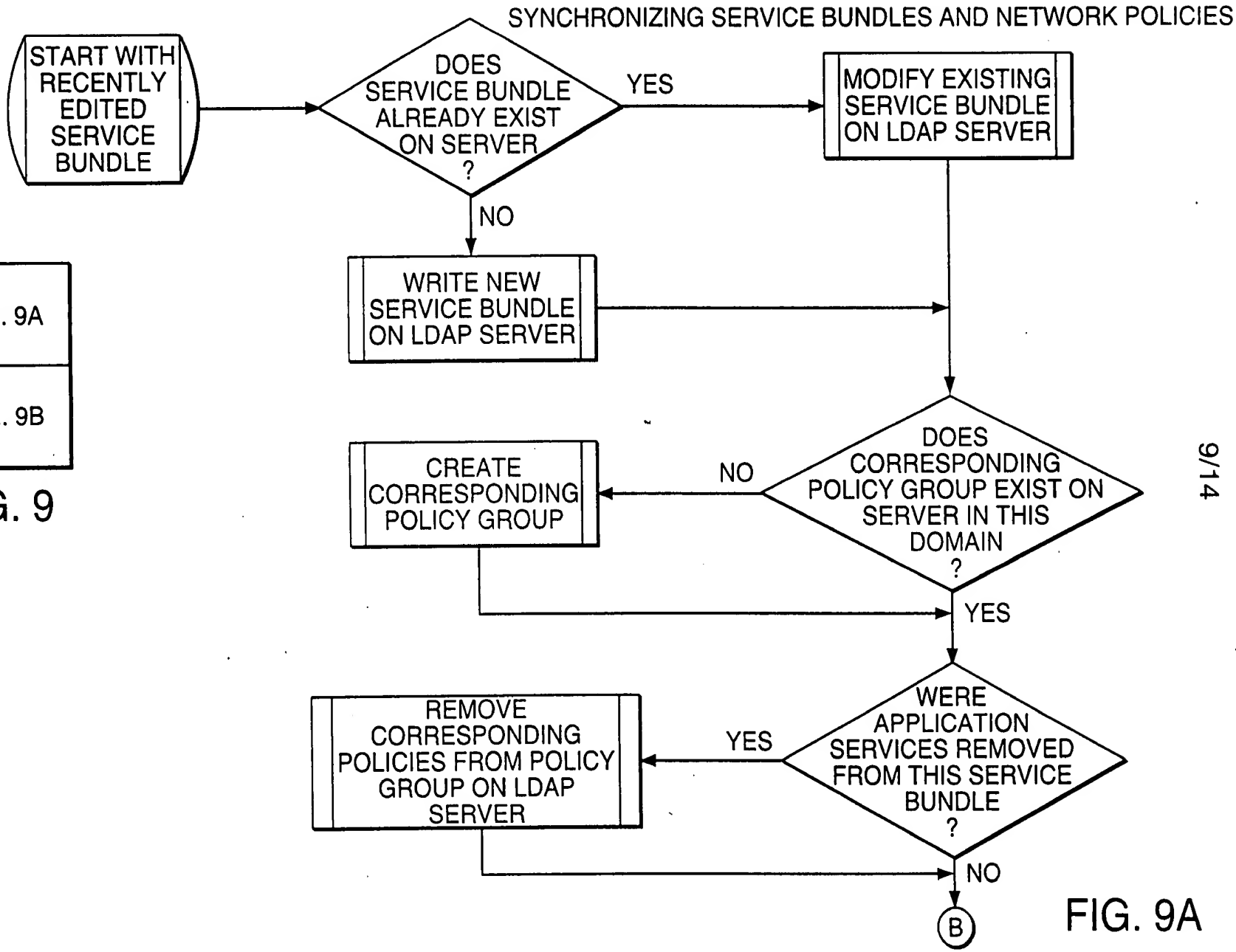

CREATE NEW SERVICE BUNDLE
ENTER NAME OF SERVICE BUNDLE
EDIT AN EXISTING SERVICE BUNDLE
ADD/REMOVE APPLICATION SERVICES FROM SERVICE BUNDLE
SAVE ?
YES
IS SERVICE BUNDLE NAME VALID ?
NO
INFORM USER OR WRITE ERROR
YES
CONTINUE ?
NO
CANCELLED SERVICE BUNDLE CREATION/MODIFICATION
YES
WRITE SERVICE BUNDLE TO LDAP SERVER
WRITE SUCCESSFUL ?
NO
YES
SERVICE BUNDLE HAS BEEN SAVED SUCCESSFULLY

FIG. 9

FIG. 9A

FIG. 9B



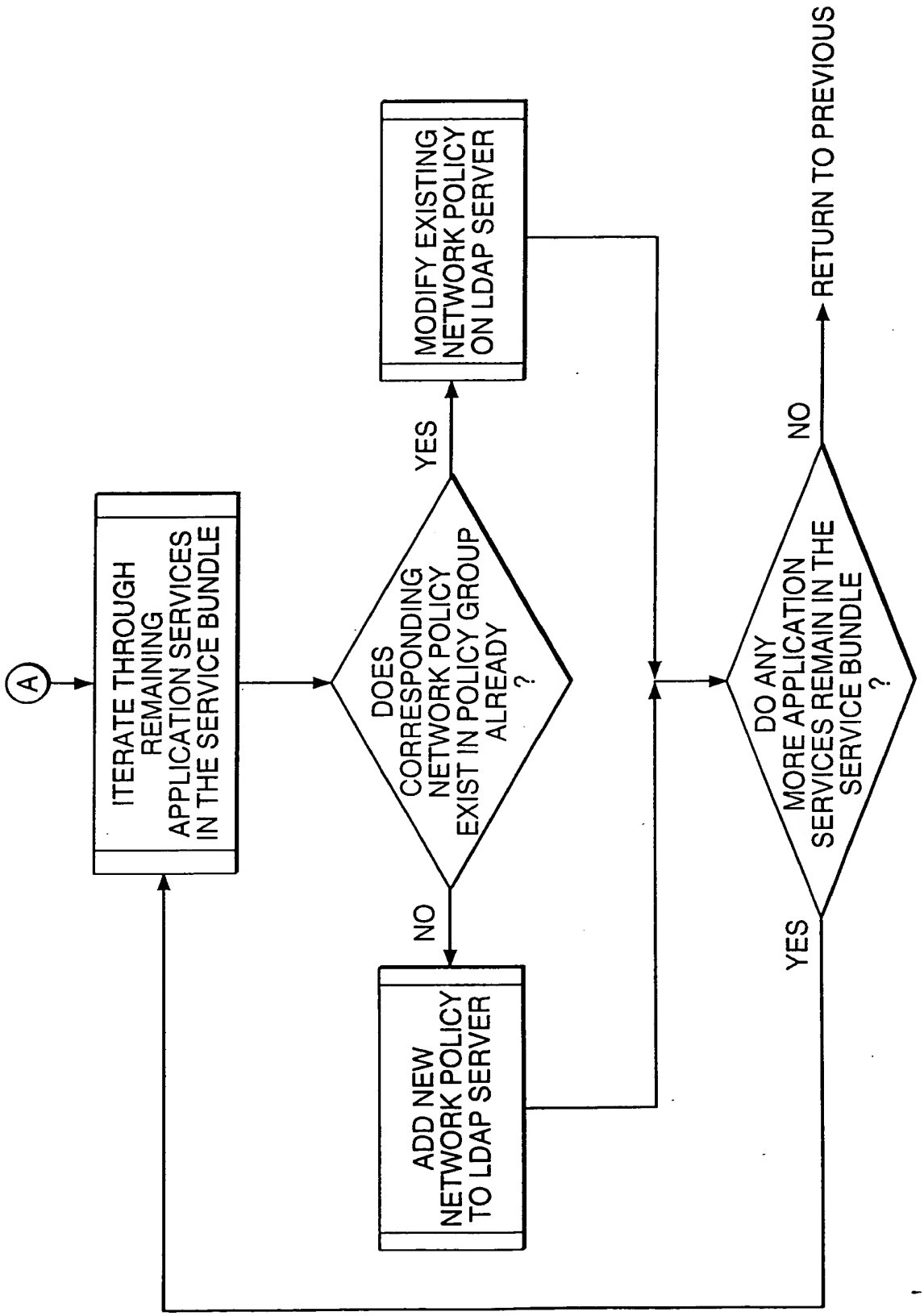

A
ITERATE THROUGH REMAINING APPLICATION SERVICES IN THE SERVICE BUNDLE
DOES CORRESPONDING NETWORK POLICY EXIST IN POLICY GROUP ALREADY ?
YES
MODIFY EXISTING NETWORK POLICY ON LDAP SERVER
NO
ADD NEW NETWORK POLICY TO LDAP SERVER
DO ANY MORE APPLICATION SERVICES REMAIN IN THE SERVICE BUNDLE ?
NO
RETURN TO PREVIOUS
YES

FIG. 9B

CREATING VIRTUAL DOMAINS

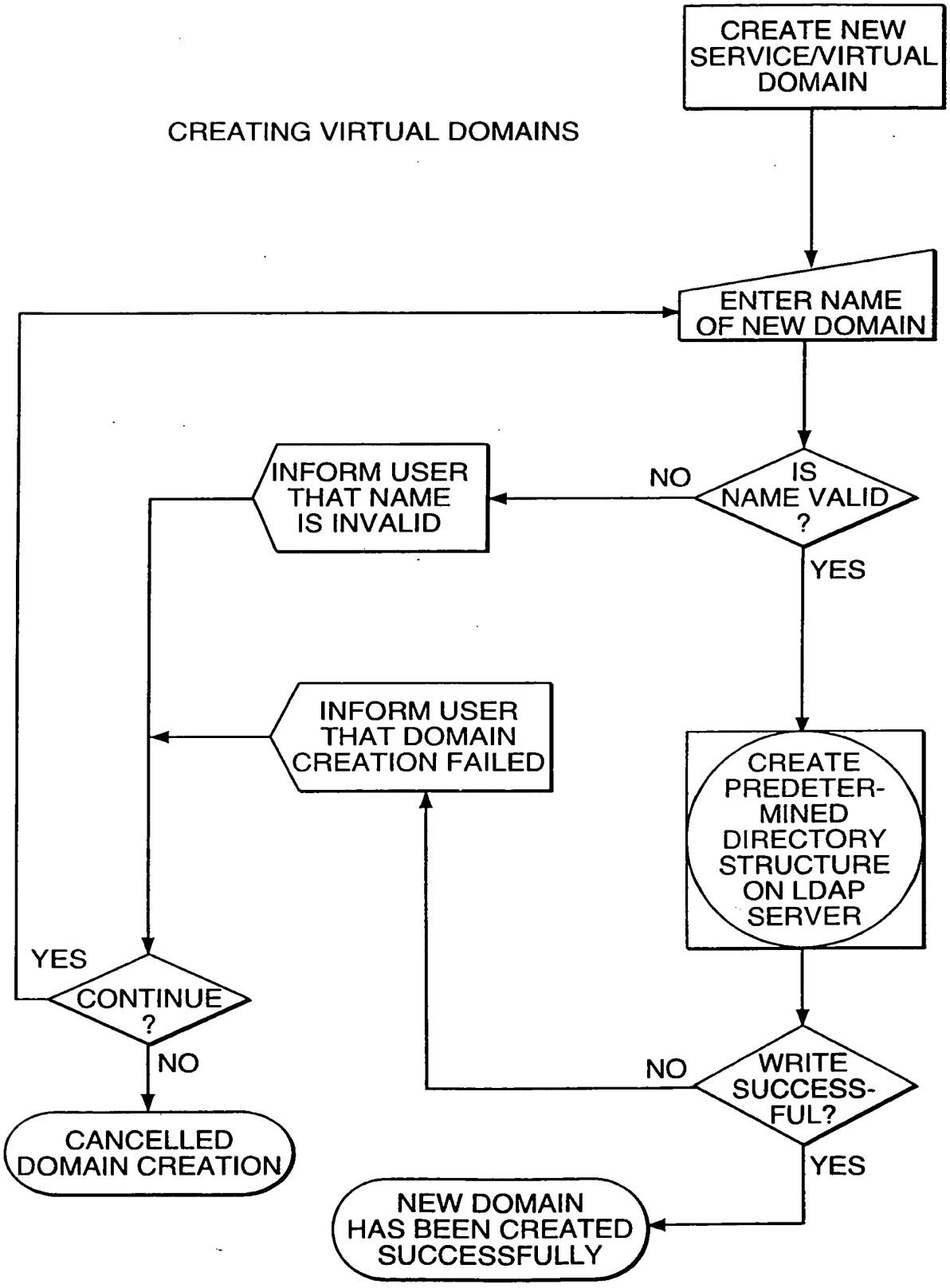


FIG. 10

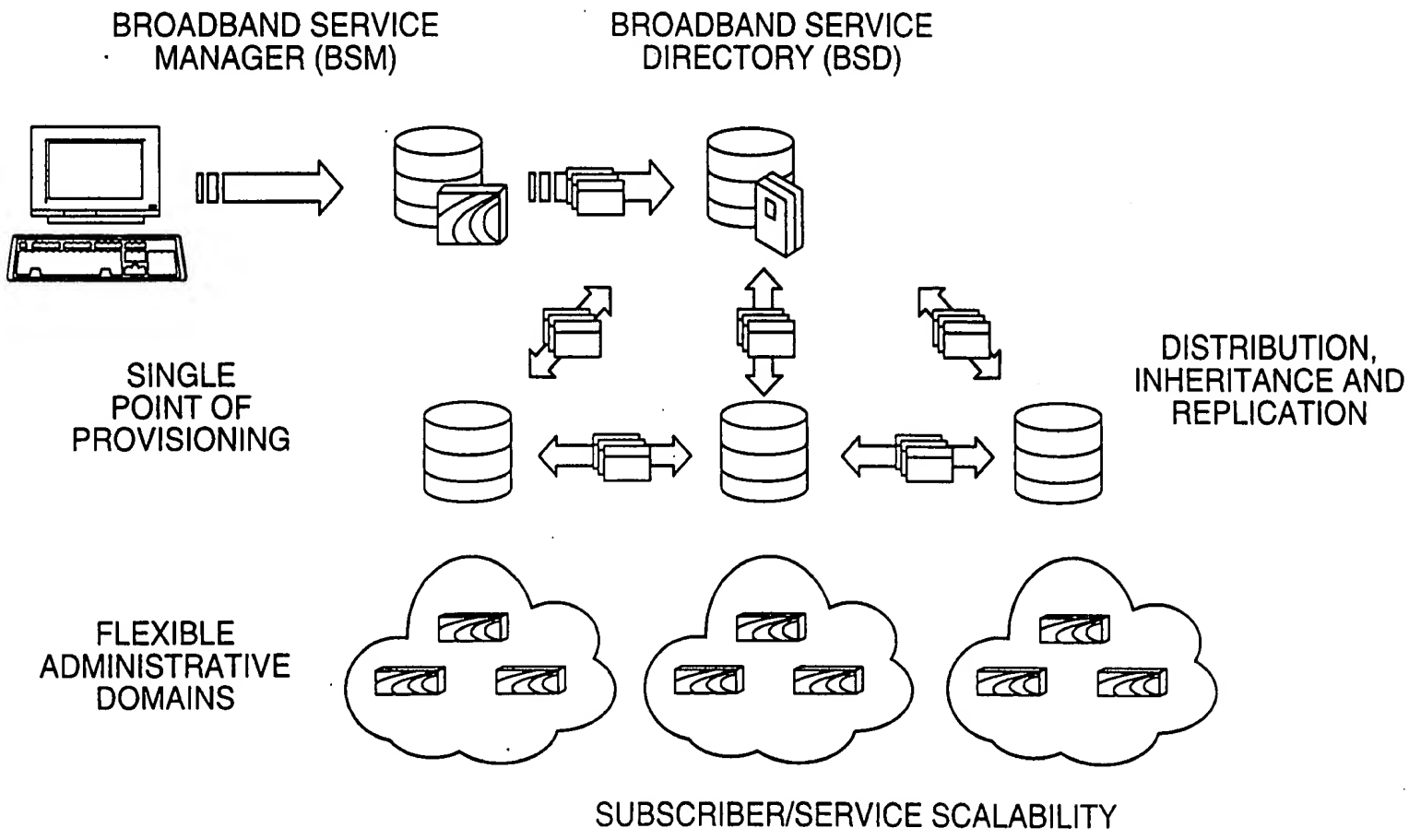

BROADBAND SERVICE MANAGER (BSM)
BROADBAND SERVICE DIRECTORY (BSD)
SINGLE POINT OF PROVISIONING
DISTRIBUTION, INHERITANCE AND REPLICATION
FLEXIBLE ADMINISTRATIVE DOMAINS
SUBSCRIBER/SERVICE SCALABILITY

FIG. 11

DIRCTORY NAME	SUB-DIRECTORY NAME	FUNCTION
APPLICATION SERVICES		CONTAINS APPLICATION SERVICES
CONFIGURATIONS		CONTAINS DIRECTORIES THAT HOLD CONFIGURATION INFORMATION FOR THE NETWORK
	SWITCHES	CONTAINS SPECIFIC SWITCH CONFIGURATION INFORMATION
	SWITCH CONFIGURATIONS	CONTAINS GENERIC (COMMON) SWITCH CONFIGURATION INFORMATION
	POLICY CONFIGURATION	CONTAINS POLICY CONFIGURATION INFORMATION (WHICH ARE REFERENCED BY COMMON SWITCH CONFIGURATIONS)
NETWORK DEVICES		CONTAINS IP DEVICES DISCOVERED ON THE NETWORK BY THE SWITCHES
NETWORK POLICIES	(ASSORTED POLICY GROUP NAMES)	CONTAINS NETWORK POLICY OBJECTS THAT THE SWITCH READS AND APPLIES TO ITS FLOWS
	DEFAULT (POLICY GROUP)	THE DEFAULT POLICY GROUP IS ALWAYS PRESENT TO ALLOW THE SWITCH TO FUNCTION IF A NETWORK MANAGER HAS NOT YET SET UP ANY OTHER BUNDLES. IT CANNOT BE REVMOVED
PEOPLE	(ASSORTED SUBSCRIBER GROUP NAMES	CONTAINS INFORMATION ABOUT SUBSCRIBERS, AND CAN CONTAIN OTHER SUBSCRIBER GROUPS

TABLE 1

FIG. 12A

FIG. 12B

FIG. 12

FIG. 12A

SERVICE BUNDLES		CONTAINS THE SERVICE BUNDLES THAT HAVE BEEN CREATED BY THE SUBSCRIBER. A DEFAULT SERVICE BUNDLE IS ADDED UPON THE SUCCESSFUL CREATION OF A NEW DOMAIN (SEE DEFAULT POLICY GROUP)
SERVICE ELEMENTS		CONTAINS DIRECTORIES THAT HOLD SERVICE ELEMENTS
	ACTIVATION PERIODS	CONTAINS ACTIVATION PERIODS. THE "ALWAYS" ACTIVATION PERIOD IS ADDED UPON THE SUCCESSFUL CREATION OF A NEW DOMAIN
	CLASS OF SERVICE	CONTAINS CLASSES OF SERVICE. SEVERAL COS's ARE ADDED UPON THE SUCCESSFUL CREATION OF A NEW DOMAIN, INCLUDING DENY, LOWQOS, MEDIUMQOS, HIGH QOS, AND CRITICAL QOS
	FLOW DIRECTIONS	CONTAINS FLOW DIRECTIONS. AS THERE ARE ONLY 3 (INBOUND, OUTBOUND, AND BI-DIRECTIONAL), THEY ARE ALL ADDED UPON THE SUCCESSFUL CREATION OF A NEW DOMAIN, AND CANNOT BE REMOVED
	APPLICATIONS	CONTAINS APPLICATIONS
	SOURCES	CONTAINS SOURCE IDs. A "DYNAMIC" SOURCE IS ADDED UPON THE SUCCESSFUL CREATION OF A NEW DOMAIN

TABLE 1

FIG. 12B